Economic Valuation of Ecosystem Services

Ben Dube, PhD

Erosion Damages

- Method: “Value Transfer”
- Description: Use the monetary valuation made by a different research team.
- Justification: Damages from Erosion are very multi-dimensional; spending even a few hours on each part would take up most of the project time.
- Source used: Pimentel et al (1995) in the Journal *Science*. By far the most cited work on this; conforms with other estimates on the US nationwide scale.
- Caveat: While most other research gives similar numbers to Pimentel, some sources show damages from a ton of erosion are somewhat higher in the Northeast US. (Revised report will take this into account.)

Phosphorus

- Method : Abatement Costs
- What it means: “How much do other ways of removing P cost?”
- Justification:
  - 1: Vermont has a statutory requirement to reduce P to the TMDL, regardless of whether calculated costs < calculated benefits.
  - 2: Vermont policy demonstrates a “willingness-to-pay” for P reductions from a variety of sources.
- Work done: Calculated “abatement curves” for recommended improvements to WWTF in VT. Choose the point on the curve where costs begin to rapidly increase.

Climate Mitigation

- Method: Social Cost of Radiative Forcing
- What it means: Rather than using the social cost of carbon (which assumes that the carbon changes are permanent, we use a value for the social cost of an additional unit of heat added to the earth's atmosphere this year.
- Justification: Carbon Credit programs have to deal with the potential impermanence of carbon gains.
  - Many require farmers to sign long-term contracts to not change practices.
  - This approach allows a farmer to continue to receive payments for maintaining great soil-health, rather than one-time payments for increasing carbon stocks.
- Source Used: Rautiainen and Lintunen (2017).